

Figure 1. Translated sequence of human PAP- α 1 cDNA.

CCTGTGGGAGAGAGCGCCGGGATCCGGACGGGGTAGCAACCGGGCAGGCCGTGCCGGCTGA	62
GGAGGTCCTGAGGCTACAGAGCTGCCGCGGCTGGCACACGAGCGCCTCGGCACTAACCGA	122
GTGTTTCGCGGGGGCTGTGAGGGGAGGGCCCCGGGCGCCATTGCTGGCGGTGGGAGCGCCG	182
CCCGGTCTCAGCCCGCCCTCGGCTGCTCTCCTCCTCCGGCTGGGAGGGGCCGTATCTCGG	242
GGCCGTCGCCAGCCCCGGCCCGGGCTCGATAATCAAGGGCCTCGGCCGTCTCCCGCACC	302
TCATTCCATCGCCCTTGCCGGGCAGCCCGGGCAGAGACC ATG TTT GAC AAG ACG	356
Met Phe Asp Lys Thr	5
CGG CTG CCG TAC GTG GCC CTC GAT GTG CTC TGC GTG TTG CTG GCT	401
Arg Leu Pro Tyr Val Ala Leu Asp Val Leu Cys Val Leu Leu Ala	20
GGA TTG CCT TTT GCA ATT CTT ACT TCA AGG CAT ACC CCC TTC CAA	446
Gly Leu Pro Phe Ala Ile Leu Thr Ser Arg His Thr Pro Phe Gln	35
CGA GGA GTA TTC TGT AAT GAT GAG TCC ATC AAG TAC CCT TAC AAA	491
Arg Gly Val Phe Cys Asn Asp Glu Ser Ile Lys Tyr Pro Tyr Lys	50
GAA GAC ACC ATA CCT TAT GCG TTA TTA GGT GGA ATA ATC ATT CCA	536
Glu Asp Thr Ile Pro Tyr Ala Leu Leu Gly Gly Ile Ile Ile Pro	65
TTC AGT ATT ATC GTT ATT ATT CTT GGA GAA ACC CTG TCT GTT TAC	581
Phe Ser Ile Ile Val Ile Ile Leu Gly Glu Thr Leu Ser Val Tyr	80
TGT AAC CTT TTG CAC TCA AAT TCC TTT ATC AGG AAT AAC TAC ATA	626
Cys Asn Leu Leu His Ser Asn Ser Phe Ile Arg Asn Asn Tyr Ile	95
GCC ACT ATT TAC AAA GCC ATT GGA ACC TTT TTA TTT GGT GCA GCT	671
Ala Thr Ile Tyr Lys Ala Ile Gly Thr Phe Leu Phe Gly Ala Ala	110
GCT AGT CAG TCC CTG ACT GAC ATT GCC AAG TAT TCA ATA GGC AGA	716
Ala Ser Gln Ser Leu Thr Asp Ile Ala Lys Tyr Ser Ile Gly Arg	125
CTG CGG CCT CAC TTC TTG GAT GTT TGT GAT CCA GAT TGG TCA AAA	761
Leu Arg Pro His Phe Leu Asp Val Cys Asp Pro Asp Trp Ser Lys	140
ATC AAC TGC AGC GAT GGT TAC ATT GAA TAC TAC ATA TGT CGA GGG	806
Ile Asn Cys Ser Asp Gly Tyr Ile Glu Tyr Tyr Ile Cys Arg Gly	155
AAT GCA GAA AGA GTT AAG GAA GGC AGG TTG TCC TTC TAT TCA GGC	851
Asn Ala Glu Arg Val Lys Glu Gly Arg Leu Ser Phe Tyr Ser Gly	170
CAC TCT TCG TTT TCC ATG TAC TGC ATG CTG TTT GTG GCA CTT TAT	896
His Ser Ser Phe Ser Met Tyr Cys Met Leu Phe Val Ala Leu Tyr	185
CTT CAA GCC AGG ATG AAG GGA GAC TGG GCA AGA CTC TTA CGC CCC	941
Leu Gln Ala Arg Met Lys Gly Asp Trp Ala Arg Leu Leu Arg Pro	200
ACA CTG CAA TTT GGT CTT GTT GCC GTA TCC ATT TAT GTG GGC CTT	986
Thr Leu Gln Phe Gly Leu Val Ala Val Ser Ile Tyr Val Gly Leu	215
TCT CGA GTT TCT GAT TAT AAA CAC CAC TGG AGC GAT GTG TTG ACT	1031
Ser Arg Val Ser Asp Tyr Lys His His Trp Ser Asp Val Leu Thr	230
GGA CTC ATT CAG GGA GCT CTG GTT GCA ATA TTA GTT GCT GTA TAT	1076
Gly Leu Ile Gln Gly Ala Leu Val Ala Ile Leu Val Ala Val Tyr	245
GTA TCG GAT TTC TTC AAA GAA AGA ACT TCT TTT AAA GAA AGA AAA	1121
Val Ser Asp Phe Phe Lys Glu Arg Thr Ser Phe Lys Glu Arg Lys	260

Figure 2. Translated sequence of human PAP- α 2 cDNA

CCTGTGGGAGAGAGCGCCGGGATCCGGACGGGGTAGCAACCGGGGCAGGCCGTGCCGGCTGA 62
GGAGGTCCTGAGGCTACAGAGCTGCCGCGGCTGGCACACGAGCGCCTCGGCACTAACC GA 122
GTGTTTCGCGGGGGCTGTGAGGGGAGGGCCCCGGGCGCCATTGCTGGCGGTGGGAGCGCCG 182
CCCCGTCTCAGCCCGCCCTCGGCTGCTCTCCTCCTCCGGCTGGGAGGGGGCCGTATCTCGG 242
GGCCGTCGCCAGCCCCGGCCCGGGCTCGATAATCAAGGGCCTCGGCCGTCGTCCCGCACC 302
TCATTCCATCGCCCTTGCCGGGCAGCCCGGGCAGAGACC ATG TTT GAC AAG ACG 356
Met Phe Asp Lys Thr
5
CGG CTG CCG TAC GTG GCC CTC GAT GTG CTC TGC GTG TTG CTG GCT 401
Arg Leu Pro Tyr Val Ala Leu Asp Val Leu Cys Val Leu Leu Ala
10 15 20
TCC ATG CCT ATG GCT GTT CTA AAA TTG GGC CAA ATA TAT CCA TTT 446
Ser Met Pro Met Ala Val Leu Lys Leu Gly Gln Ile Tyr Pro Phe
25 30 35
CAG AGA GGC TTT TTC TGT AAA GAC AAC AGC ATC AAC TAT CCG TAC 491
Gln Arg Gly Phe Phe Cys Lys Asp Asn Ser Ile Asn Tyr Pro Tyr
40 45 50
CAT GAC AGT ACC GGC GGA TCC ACT GTC CTC ATC CTA GTG GGG GTT 536
His Asp Ser Thr Ala Ala Ser Thr Val Leu Ile Leu Val Gly Val
55 60 65
GGC TTG CCC GTT TCC TCT ATT ATT CTT GGA GAA ACC CTG TCT GTT 581
Gly Leu Pro Val Ser Ser Ile Ile Leu Gly Glu Thr Leu Ser Val
70 75 80
TAC TGT AAC CTT TTG CAC TCA AAT TCC TTT ATC AGT AAT AAC TAC 626
Tyr Cys Asn Leu Leu His Ser Asn Ser Phe Ile Ser Asn Asn Tyr
85 90 95
ATA GCC ACT ATT TAC AAA GCC ATT GGA ACC TTT TTA TTT GGT GCA 671
Ile Ala Thr Ile Tyr Lys Ala Ile Gly Thr Phe Leu Phe Gly Ala
100 105 110
GCT GCT AGT CAG TCC CTG ACT GAC ATT GCC AAG TAT TCA ATA GGC 716
Ala Ala Ser Gln Ser Leu Thr Asp Ile Ala Lys Tyr Ser Ile Gly
115 120 125
AGA CTG CGG CCT CAC TTC TTG GAT GTT TGT GAT CCA GAT TGG TCA 761
Arg Leu Arg Pro His Phe Leu Asp Val Cys Asp Pro Asp Trp Ser
130 135 140
AAA ATC AAC TGC AGC GAT GGT TAC ATT GAA TAC TAC ATA TGT CGA 806
Lys Ile Asn Cys Ser Asp Gly Tyr Ile Glu Tyr Tyr Ile Cys Arg
145 150 155
GGG AAT GCA GAA AGA GTT AAG GAA GGC AGG TTG TCC TTC TAT TCA 851
Gly Asn Ala Glu Arg Val Lys Glu Gly Arg Leu Ser Phe Tyr Ser
160 165 170
GGC CAC TCT TCG TTT TCC ATG TAC TGC ATG CTG TTT GTG GCA CTT 896
Gly His Ser Ser Phe Ser Met Tyr Cys Met Leu Phe Val Ala Leu
175 180 185
TAT CTT CAA GCC AGG ATG AAG GGA GAC TGG GCA AGA CTC TTA CGC 941
Tyr Leu Gln Ala Arg Met Lys Gly Asp Trp Ala Arg Leu Leu Arg
190 195 200
CCC ACA CTG CAA TTT GGT CTT GTT GCC GTA TCC ATT TAT GTG GGC 986
Pro Thr Leu Gln Phe Gly Leu Val Ala Val Ser Ile Tyr Val Gly
205 210 215
CTT TCT CGA GTT TCT GAT TAT AAA CAC CAC TGG AGC GAT GTG TTG 1031
Leu Ser Arg Val Ser Asp Tyr Lys His His Trp Ser Asp Val Leu
220 225 230
ACT GGA CTC ATT CAG GGA GCT CTG GTT GCA ATA TTA GTT GCT GTA 1076
Thr Gly Leu Ile Gln Gly Ala Leu Val Ala Ile Leu Val Ala Val
235 240 245
TAT GTA TCG GAT TTC TTC AAA GAA AGA ACT TCT TTT AAA GAA AGA 1121
Tyr Val Ser Asp Phe Phe Lys Glu Arg Thr Ser Phe Lys Glu Arg
250 260

Figure 3. Translated sequence of PAP- β cDNA

GGCGCAGCTCTGCAAAAGTTTCTGCTCGGGATCTGGCTCTCTTCCCCTTGACTTTAGAACG	62
ATTTAGGGTTGACAGAGGAAAGCAGAGGCGCGCAGGAGGAGCAGAAAACACCACCTTCTG	122
CAGTTGGAGGCAGGCAGCCCCGGCTGCACTCTAGCCGCCGCGCCCGAGCCGGGGCCGAC	182
CCGCCACTATCCGCAGCAGCCTCGGCCAGGAGGCGACCCGGGCGCCTGGGTGTGTGGCTG	242
CTGTTGCGGGACGTCTTCGCGGGGCGGGAGGCTCGCGCCGCAGCCAGCGCC	299
	Met Gln
AAC TAC AAG TAC GAC AAA GCG ATC GTC CCG GAG AGC AAG AAC GGC	344
Asn Tyr Lys Tyr Asp Lys Ala Ile Val Pro Glu Ser Lys Asn Gly	
5 10 15	
GGC AGC CCG GCG CTC AAC AAC AAC CCG AGG AGG AGC GGC AGC AAG	389
Gly Ser Pro Ala Leu Asn Asn Asn Pro Arg Arg Ser Gly Ser Lys	
20 25 30	
CGG GTG CTG CTC ATC TGC CTC GAC CTC TTC TGC CTC TTC ATG GCG	434
Arg Val Leu Leu Ile Cys Leu Asp Leu Phe Cys Leu Phe Met Ala	
35 40 45	
GGC CTC CCC TTC CTC ATC ATC GAG ACA AGC ACC ATC AAG CCT TAC	479
Gly Leu Pro Phe Leu Ile Ile Glu Thr Ser Thr Ile Lys Pro Tyr	
50 55 60	
CAC CGA GGG TTT TAC TGC AAT GAT GAG AGC ATC AAG TAC CCA CTG	524
His Arg Gly Phe Tyr Cys Asn Asp Glu Ser Ile Lys Tyr Pro Leu	
65 70 75	
AAA ACT GGT GAG ACA ATA AAT GAC GCT GTG CTC TGT GCC GTG GGG	569
Lys Thr Gly Glu Thr Ile Asn Asp Ala Val Leu Cys Ala Val Gly	
80 85 90	
ATC GTC ATT GCC ATC CTC GCG ATC ATC ACG GGG GAA TTC TAC CGG	614
Ile Val Ile Ala Ile Leu Ala Ile Ile Thr Gly Glu Phe Tyr Arg	
95 100 105	
ATC TAT TAC CTG AAG AAG TCG CGG TCG ACG ATT CAG AAC CCC TAC	659
Ile Tyr Tyr Leu Lys Lys Ser Arg Ser Thr Ile Gln Asn Pro Tyr	
110 115 120	
GTG GCA GCA CTC TAT AAG CAA GTG GGC TGC TTC CTC TTT GGC TGT	704
Val Ala Ala Leu Tyr Lys Gln Val Gly Cys Phe Leu Phe Gly Cys	
125 130 135	
GCC ATC AGC CAG TCT TTC ACA GAC ATT GCC AAA GTG TCC ATA GGG	749
Ala Ile Ser Gln Ser Phe Thr Asp Ile Ala Lys Val Ser Ile Gly	
140 145 150	
CGC CTG CGT CCT CAC TTC TTG AGT GTC TGC AAC CCT GAT TTC AGC	794
Arg Leu Arg Pro His Phe Leu Ser Val Cys Asn Pro Asp Phe Ser	
155 160 165	
CAG ATC AAC TGC TCT GAA GGC TAC ATT CAG AAC TAC AGA TGC AGA	839
Gln Ile Asn Cys Ser Glu Gly Tyr Ile Gln Asn Tyr Arg Cys Arg	
170 180	
GGT GAT GAC AGC AAA GTC CAG GAA GCC AGG AAG TCC TTC TTC TCT	884
Gly Asp Asp Ser Lys Val Gln Glu Ala Arg Lys Ser Phe Phe Ser	
185 190 195	
GGC CAT GCC TCC TTC TCC ATG TAC ACT ATG CTG TAT TTG GTG CTA	929
Gly His Ala Ser Phe Ser Met Tyr Thr Met Leu Tyr Leu Val Leu	
200 205 210	
TAC CTG CAG GCC CGC TTC ACT TGG CGA GGA GCC CGC CTG CTC CGG	974
Tyr Leu Gln Ala Arg Phe Thr Trp Arg Gly Ala Arg Leu Leu Arg	
215 220 225	
CCC CTC CTG CAG TTC ACC TTG ATC ATG ATG GCC TTC TAC ACG GGA	1019
Pro Leu Leu Gln Phe Thr Leu Ile Met Met Ala Phe Tyr Thr Gly	
230 235 240	
CTG TCT CGC GTA TCA GAC CAC AAG CAC CAT CCC AGT GAT GTT CTG	1064
Leu Ser Arg Val Ser Asp His Lys His His Pro Ser Asp Val Leu	
245 250 255	
GCA GGA TTT GCT CAA GGA GCC CTG GTG GCC TGC TGC ATA GTT TTC	1109
Ala Gly Phe Ala Gln Gly Ala Leu Val Ala Cys Cys Ile Val Phe	

Figure 4. Translated sequence of human PAP-γ cDNA

ACC	ATG	CAG	CGG	AGG	TGG	GTC	TTC	GTG	CTG	CTC	GAC	GTG	CTG	TGC	47
Met	Gln	Arg	Arg	Trp	Val	Phe	Val	Leu	Leu	Asp	Val	Leu	Cys		
TTA	CTG	GTC	GCC	TCC	CTG	CCC	TTC	GCT	ATC	CTG	ACG	CTG	GTG	AAC	92
Leu	Leu	Val	Ala	Ser	Leu	Pro	Phe	Ala	Ile	Leu	Thr	Leu	Val	Asn	
GCC	CCG	TAC	AAG	CGA	GGA	TTT	TAC	TGC	GGG	GAT	GAC	TCC	ATC	CGG	137
Ala	Pro	Tyr	Lys	Arg	Gly	Phe	Tyr	Cys	Gly	Asp	Asp	Ser	Ile	Arg	
TAC	CCC	TAC	CGT	CCA	GAT	ACC	ATC	ACC	CAC	GGG	CTC	ATG	GCT	GGG	182
Tyr	Pro	Tyr	Arg	Pro	Asp	Thr	Ile	Thr	His	Gly	Leu	Met	Ala	Gly	
GTC	ACC	ATC	ACG	GCC	ACC	GTC	ATC	CTT	GTC	TCG	GCC	GGG	GAA	GCC	227
Val	Thr	Ile	Thr	Ala	Thr	Val	Ile	Leu	Val	Ser	Ala	Gly	Glu	Ala	
TAC	CTG	GTG	TAC	ACA	GAC	CGG	CTC	TAT	TCT	CGC	TCG	GAC	TTC	AAC	272
Tyr	Leu	Val	Tyr	Thr	Asp	Arg	Leu	Tyr	Ser	Arg	Ser	Asp	Phe	Asn	
AAC	TAC	GTG	GCT	GCT	GTA	TAC	AAG	GTG	CTG	GGG	ACC	TTC	CTG	TTT	317
Asn	Tyr	Val	Ala	Ala	Val	Tyr	Lys	Val	Leu	Gly	Thr	Phe	Leu	Phe	
GGG	GCT	GCC	GTG	AGC	CAG	TCT	CTG	ACA	GAC	CTG	GCC	AAG	TAC	ATG	362
Gly	Ala	Ala	Val	Ser	Gln	Ser	Leu	Thr	Asp	Leu	Ala	Lys	Tyr	Met	
ATT	GGG	CGT	CTG	AAG	CCC	AAC	TTC	CTA	GCC	GTC	TGC	GAC	CCC	GAC	407
Ile	Gly	Arg	Leu	Lys	Pro	Asn	Phe	Leu	Ala	Val	Cys	Asp	Pro	Asp	
TGG	AGC	CGG	GTC	AAC	TGC	TCG	GTC	TAT	GTG	CAG	CTG	GAG	AAG	GTG	452
Trp	Ser	Arg	Val	Asn	Cys	Ser	Val	Tyr	Val	Gln	Leu	Glu	Lys	Val	
TGC	AGG	GGA	AAC	CCT	GCT	GAT	GTC	ACC	GAG	GCC	AGG	TTG	TCT	TTC	497
Cys	Arg	Gly	Asn	Pro	Ala	Asp	Val	Thr	Glu	Ala	Arg	Leu	Ser	Phe	
TAC	TCG	GGA	CAC	TCT	TCC	TTT	GGG	ATG	TAC	TGC	ATG	GTG	TTC	TTG	542
Tyr	Ser	Gly	His	Ser	Ser	Phe	Gly	Met	Tyr	Cys	Met	Val	Phe	Leu	
GCG	CTG	TAT	GTG	CAG	GCA	CGA	CTC	TGT	TGG	AAG	TGG	GCA	CGG	CTG	587
Ala	Leu	Tyr	Val	Gln	Ala	Arg	Leu	Cys	Trp	Lys	Trp	Ala	Arg	Leu	
CTG	CGA	CCC	ACA	GTC	CAG	TTC	TTC	CTG	GTG	GCC	TTT	GCC	CTC	TAC	632
Leu	Arg	Pro	Thr	Val	Gln	Phe	Phe	Leu	Val	Ala	Phe	Ala	Leu	Tyr	
GTG	GGC	TAC	ACC	CGC	GTG	TCT	GAT	TAC	AAA	CAC	CAC	TGG	AGC	GAT	677
Val	Gly	Tyr	Thr	Arg	Val	Ser	Asp	Tyr	Lys	His	His	Trp	Ser	Asp	
GTC	CTT	GTT	GGC	CTC	CTG	CAG	GGG	GCA	CTG	GTG	GCT	GCC	CTC	ACT	722
Val	Leu	Val	Gly	Leu	Leu	Gln	Gly	Ala	Leu	Val	Ala	Ala	Leu	Thr	
GTC	TGC	TAC	ATC	TCA	GAC	TTC	TTC	AAA	GCC	CGA	CCC	CCA	CAG	CAC	767
Val	Cys	Tyr	Ile	Ser	Asp	Phe	Phe	Lys	Ala	Arg	Pro	Pro	Gln	His	
TGT	CTG	AAG	GAG	GAG	GAG	CTG	GAA	CGG	AAG	CCC	AGC	CTG	TCA	CTG	812
Cys	Leu	Lys	Glu	Glu	Glu	Leu	Glu	Arg	Lys	Pro	Ser	Leu	Ser	Leu	
ACG	TTG	ACC	CTG	GGG	CGA	GGC	TGA	CCACA	ACCACTTATGGG	ATACCCGCACT					864
Thr	Leu	Thr	Leu	Gly	Arg	Gly	***								
CTTCTTCCTGAGGCCGGACCCCGCCAGGCAGGGAGCTGCTGTGAGTCCAGCTGATGCCC															924
ACCCAGGTGGTCCCTCCAGCCTGGTTAGGCACTGAGGGTTCTGGACGGGCTCCAGGAACC															984

Continuation of Figure 4

CTGGGCTGATGGGAGCAGTGAGCGGTTCCGCTGCCCCCTGCCCTGCACTGGACCAGGAGT	1044
CTGGAGATGCCTGGGTAGCCCTCAGCATTTGGAGGGGAACCTGTTCCCGTCGGTCCCCAA	1104
ATATCCCCTTCTTTTTATGGGGTTAAGGAAGGGACCGAGAGATCAGATAGTTGCTGTTTT	1164
GTAAAATGTAATGTATATGTGGTTTTTAGTAAAATAGGGCACCTGTTTCACAAAAAAAAA	1224
AAAAAAAAA	1234

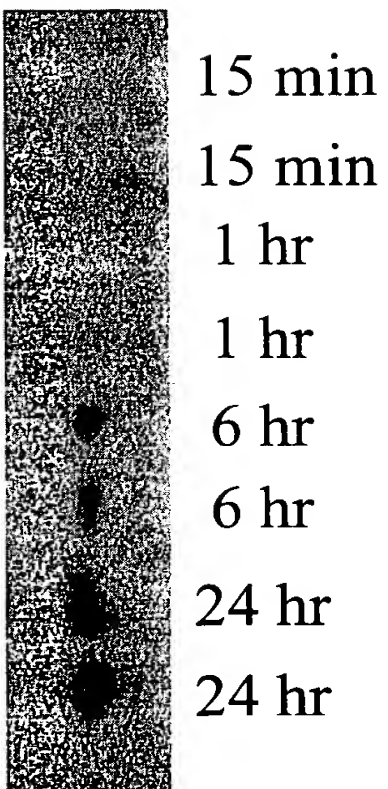
03642327 041757

Figure 5. Amino acid sequences alignment of murine PAP with the three human isoforms of PAP.

		10	20	30	40	50
M_PAP.AMI	1	---	---	---	---	---
PAP_A1.AMI	1	---	---	---	---	---
PAP_A2.AMI	1	---	---	---	---	---
PAP_B.AMI	1	---	---	---	---	---
PAP_G.AMI	1	---	---	---	---	---
		60	70	80	90	100
M_PAP.AMI	51	---	---	---	---	---
PAP_A1.AMI	51	---	---	---	---	---
PAP_A2.AMI	51	---	---	---	---	---
PAP_B.AMI	51	---	---	---	---	---
PAP_G.AMI	51	---	---	---	---	---
		110	120	130	140	150
M_PAP.AMI	101	---	---	---	---	---
PAP_A1.AMI	101	---	---	---	---	---
PAP_A2.AMI	101	---	---	---	---	---
PAP_B.AMI	101	---	---	---	---	---
PAP_G.AMI	101	---	---	---	---	---
		160	170	180	190	200
M_PAP.AMI	151	---	---	---	---	---
PAP_A1.AMI	151	---	---	---	---	---
PAP_A2.AMI	151	---	---	---	---	---
PAP_B.AMI	151	---	---	---	---	---
PAP_G.AMI	151	---	---	---	---	---
		210	220	230	240	250
M_PAP.AMI	201	---	---	---	---	---
PAP_A1.AMI	201	---	---	---	---	---
PAP_A2.AMI	201	---	---	---	---	---
PAP_B.AMI	201	---	---	---	---	---
PAP_G.AMI	201	---	---	---	---	---
		260	270	280	290	300
M_PAP.AMI	251	---	---	---	---	---
PAP_A1.AMI	251	---	---	---	---	---
PAP_A2.AMI	251	---	---	---	---	---
PAP_B.AMI	251	---	---	---	---	---
PAP_G.AMI	251	---	---	---	---	---
		310	320	330	340	350
M_PAP.AMI	301	---	---	---	---	---
PAP_A1.AMI	301	---	---	---	---	---
PAP_A2.AMI	301	---	---	---	---	---
PAP_B.AMI	301	---	---	---	---	---
PAP_G.AMI	301	---	---	---	---	---

Figure 6.

Expression of PAP- β induced with IL-1 β in ECV304 Cells



**Fig. 8 Northern Analysis of PAP- α mRNA expression
in tumor vs normal tissues**

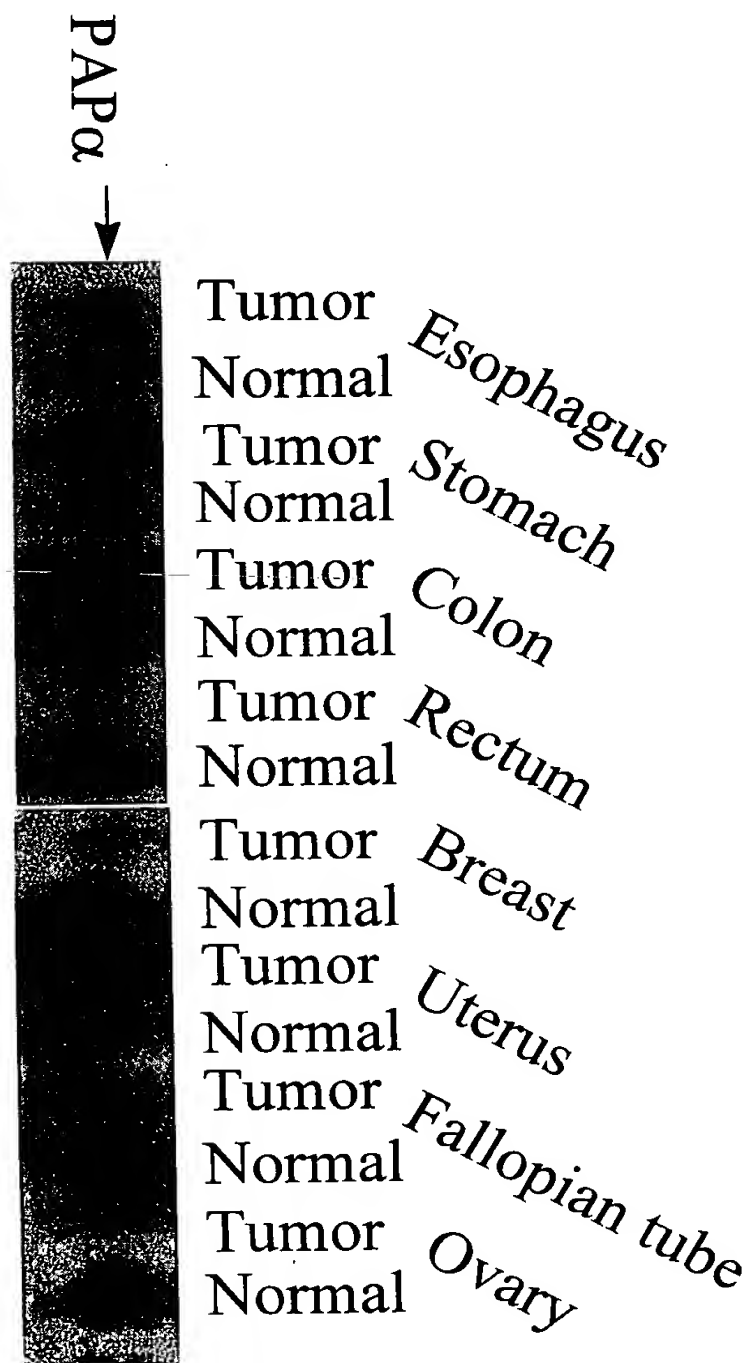


FIGURE 9

